

PICTORIAL REVIEW

MRI of vaginal conditions

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Magnetic resonance imaging (MRI) has become an important part of the assessment of suspected vaginal pathology. This pictorial review demonstrates the MRI features and some of the histopathological findings of a variety of vaginal conditions. These may be congenital (total vaginal agenesis, partial vaginal agenesis, longitudinal vaginal septum, transverse vaginal septum), benign (Bartholin's cyst, diffuse vaginal inflammation, invasive endometriosis, ureterovaginal fistula, post-surgical appearances with the formation of a neovagina and adhesions) or malignant, usually due to extension or recurrence from another pelvic malignancy. In this paper, examples of the above are described and illustrated together with examples of the much rarer primary vaginal malignancies.

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Introduction

At our institutions, our routine pelvic MRI includes axial T1W and T2W images and sagittal T2W images. Coronal T2W images are added in the assessment of congenital anomalies, with a large field of view to include the kidneys. Fat-suppressed axial T1W images improve detection of haemorrhagic or proteinaceous lesions and distinguish them from fat. High-resolution axial T2W images are obtained through the vagina in cases of suspected vaginal pathology, using a small field of view and decreased slice thickness.

The vagina is a fibromuscular structure situated between the urinary bladder and the rectum. The upper third of the vagina is at the level of the lateral vaginal fornices, the middle third at the level of the urinary bladder base and the

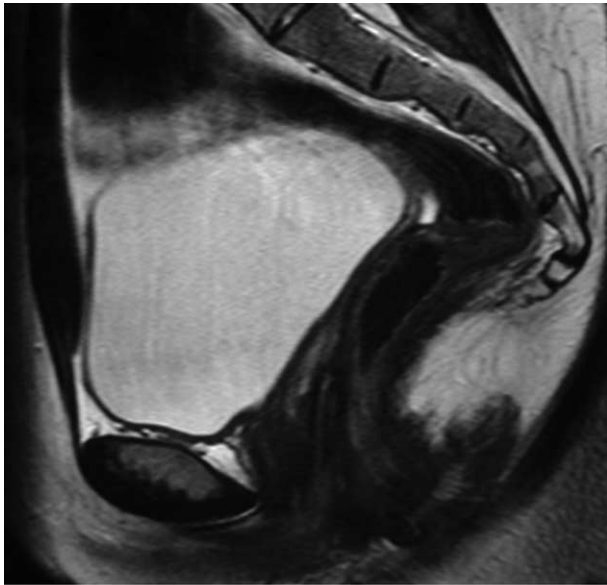
lower third at the level of the urethra. The vagina consists of three layers: the inner mucosal layer and also the secretions within the vaginal canal are seen together as a high signal intensity (SI) stripe on T2W images and low signal on T1W images; the middle submucosal/muscular layer is of low signal on both T1W and T2W images; the outer adventitial layer is of high signal on T2W images, because of the slowly flowing blood in the vaginal venous plexus.

Congenital anomalies

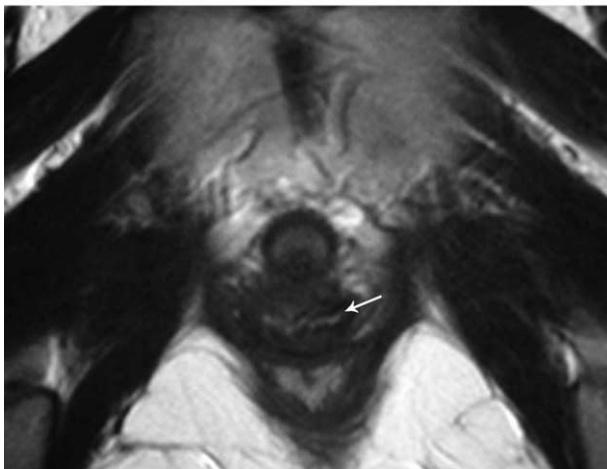
The embryological development of the vagina is complex and controversial. The upper third of the vagina derives from the Müllerian ducts which descend cephalocaudally, also forming the uterus, cervix and fallopian tubes.¹ The lower two thirds of the vagina derives from the urogenital ducts, from two sinovaginal tubercles which fuse to form the vaginal plate under the influence of the Müllerian ducts.² Congenital anomalies of the vagina are

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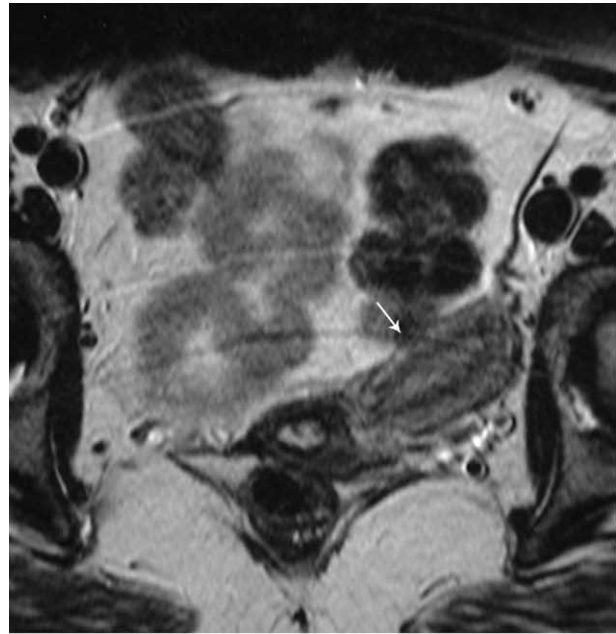


(a)

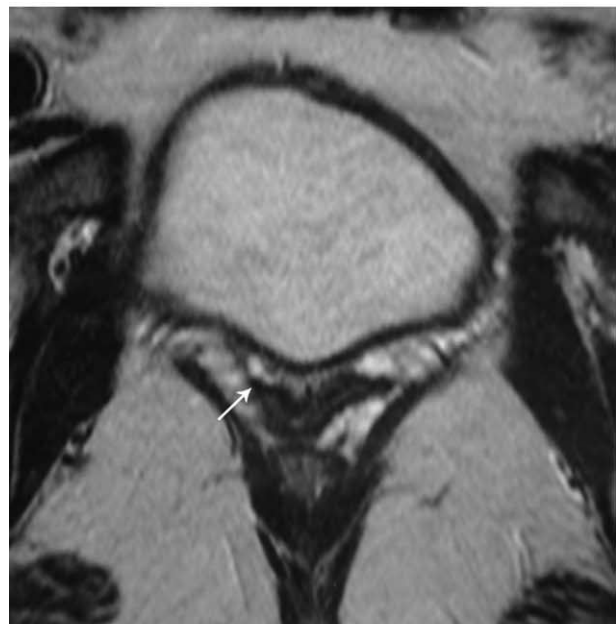


(b)

Figure 1 Meyer-Rokitanski-Küster-Hauser syndrome in a 17-year-old girl with agenesis of the upper two thirds of the vagina, absent uterus and normal ovaries, presenting with primary amenorrhoea. (a) Sagittal T2W image of the pelvis at midline demonstrating absence of the uterus and upper two thirds of the vagina. (b) High-resolution axial T2W image of the lower vagina demonstrating normal development (arrow).



(a)



(b)

Figure 2 Partial vaginal agenesis: left unicornuate uterus and partial vaginal agenesis in a 24-year-old woman presenting with primary infertility. (a) High-resolution axial T2W image demonstrating a left unicornuate uterus (arrow). (b) High-resolution axial T2W image demonstrating partial agenesis of the right vaginal fornix (arrow).

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